

Docket No. 87333.5203  
Customer No.: 30734  
Application No.: 10/521,358

Patent

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**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings of claims in the application:

Claims 1-2. (Cancelled)

3. (Currently Amended) A sample processing station, comprising:

a device base plate;

a shaking table plate vertically supported against said device base plate and movable in a horizontal plane;

a shaking drive arranged between and connected to the two said plates for the horizontal movement of the shaking table plate, said movement essentially and exclusively being one of translation, with the means by which to arrest the shaking table plate into a precise resting position;

a microtiter plate holding fixture provided on the shaking table plate; and

a removable microtiter plate inserted in the holding fixture, said plate exhibiting a multitude of sample wells, which can be filled with samples or whose samples can be emptied out by an automatically activated filling or removing device; wherein, that over the microtiter plate is a removably arranged evacuating plate unit spanning over the latter, which is formed to be hermetically sealed in such a manner that a vacuum is permitted to be generated in all of the sample wells of the microtiter plate and which is controllably connectable to a vacuum source or to a directed airflow source via ports in the device base plate,

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wherein heat can be conducted to the bottom ends of the sample wells originating from an electrical surface heating device provided on the shaking table plate, said electrical surface heating device being connected via flexible lines to a power supply terminal in the device base plate.

~~The sample processing station in accordance with claim 2,~~ wherein the surface heating device on the shaking table plate exhibits a metal heat distribution plate, arranged over a surface heating element, from which heat transfer knobs formed as one piece protrude, said knobs each respectively being assigned to a corresponding sample well.

4. (Previously Presented) The sample processing station in accordance with claim 3, wherein located between the heat transfer knobs and the sample well bottom ends is a continuous, pliable heat transfer layer, more specifically in the form of a heat conducting foamed plastic mat.

5. (Previously Presented) The sample processing station in accordance with claim 4, wherein the space over the heat distribution plate and under the heat transfer layer around the heat transfer knobs along the lateral edges of the shaking table plate is hermetically sealed and via a lead-through channel configuration penetrating through the heat distribution plate, the surface heating element and the shaking table plate as well as via flexible line segments in the direction to the device base plate, is controllably connected to a cooling medium circuit.

6. (Cancelled)

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7. (Currently Amended) A sample processing station, comprising:

a device base plate;

a shaking table plate vertically supported against said device base plate and

movable in a horizontal plane;

a shaking drive arranged between and connected to the two said plates for the

horizontal movement of the shaking table plate, said movement essentially and

exclusively being one of translation, with the means by which to arrest the shaking table

plate into a precise resting position;

a microtiter plate holding fixture provided on the shaking table plate; and

a removable microtiter plate inserted in the holding fixture, said plate

exhibiting a multitude of sample wells, which can be filled with samples or whose

samples can be emptied out by an automatically activated filling or removing device;

wherein, that over the microtiter plate is a removably arranged evacuating plate unit

spanning over the latter, which is formed to be hermetically sealed in such a manner that

a vacuum is permitted to be generated in all of the sample wells of the microtiter plate

and which is controllably connectable to a vacuum source or to a directed airflow source

via ports in the device base plate.

~~The sample processing station in accordance with claim 1;~~ wherein that over the sample well connecting plate or over a sample container connecting plate connecting the sample containers at the level of their flow openings is located a channel opening plate securely connected to the microtiter plate, from which channel opening plate channel connections, specifically provided with lower slosh baffle rings, extend as one piece to the individual

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sample container openings and that the space over the sample container connecting plate and below the channel opening plate around the individual channel connections along the lateral edges of the microtiter plate is hermetically sealed off and is controllably connectable to a cooling medium circuit by means of a lead-through channel configuration extending through the microtiter plate and finally up to beneath the shaking table plate and via flexible line segments in the direction to the device base plate.

Claims 8-12. (Cancelled)

13. (Currently Amended) A sample processing station, comprising:

a device base plate;

a shaking table plate vertically supported against said device base plate and  
movable in a horizontal plane;

a shaking drive arranged between and connected to the two said plates for the  
horizontal movement of the shaking table plate, said movement essentially and  
exclusively being one of translation, with the means by which to arrest the shaking table  
plate into a precise resting position;

a microtiter plate holding fixture provided on the shaking table plate; and

a removable microtiter plate inserted in the holding fixture, said plate  
exhibiting a multitude of sample wells, which can be filled with samples or whose  
samples can be emptied out by an automatically activated filling or removing device;  
thus characterized, that over the microtiter plate is a removably arranged evacuating plate  
unit spanning over the latter, which is formed to be hermetically sealed in such a manner

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that a vacuum is permitted to be generated in all of the sample wells of the microtiter plate and which is controllably connectable to a vacuum source or to a directed airflow source via ports in the device base plate.

wherein the evacuating plate unit exhibits lateral walls whose lower edge around the lateral edge of the microtiter plate provides a releasably hermetic seal against the shaking table plate that is formed to be gas tight for the surroundings and that the inner space in the evacuating plate unit is controllably connectable to the vacuum source or to the directed airflow source by means of a lead-through channel configuration penetrating the shaking table plate and via flexible line segments to the device base plate.

~~The sample processing station in accordance with claim 11,~~ wherein on the upper face of the microtiter plate or on the upper face of a channel opening plate set thereupon, support knobs protrude which are located between the sample container flow openings and against which the downward extending wall surface of the cover wall of the evacuating plate unit is supported during action of the vacuum upon the inner space thereof.

14. (Currently Amended) A sample processing station, comprising:

a device base plate;

a shaking table plate vertically supported against said device base plate and movable in a horizontal plane;

a shaking drive arranged between and connected to the two said plates for the horizontal movement of the shaking table plate, said movement essentially and exclusively being one of translation, with the means by which to arrest the shaking table plate into a precise resting position;

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a microtiter plate holding fixture provided on the shaking table plate; and  
a removable microtiter plate inserted in the holding fixture, said plate  
exhibiting a multitude of sample wells, which can be filled with samples or whose  
samples can be emptied out by an automatically activated filling or removing device;  
thus characterized, that over the microtiter plate is a removably arranged evacuating plate  
unit spanning over the latter, which is formed to be hermetically sealed in such a manner  
that a vacuum is permitted to be generated in all of the sample wells of the microtiter  
plate and which is controllably connectable to a vacuum source or to a directed airflow  
source via ports in the device base plate,  
wherein the evacuating plate unit exhibits lateral walls whose lower edge releasably  
provides a hermetic seal against the device base plate that is formed to be gas tight for the  
surroundings.

~~The sample processing station in accordance with claim 9,~~ wherein on the underside of the evacuating plate unit is provided a matrix configuration comprised of mixing pins that are securely connected or securely connectable to said evacuating plate unit underside, whereby the matrix configuration is set or is adjustable at such a level on the evacuating plate unit that, when the evacuating plate unit is under vacuum and is hermetically sealed off against the device base, the individual mixing pins each respectively assigned to one sample well of the microtiter plate extend with their bottom tips into the corresponding sample wells without touching the bottom thereof, wherein the position of the mixing pins in the matrix configuration and the drive amplitude of the shaking drive are set in such a manner that, during operation and during repose, the mixing pins do not come in contact with the inside walls of the sample wells.

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15. **(Currently Amended)** A sample processing station, comprising:
- a device base plate;
  - a shaking table plate vertically supported against said device base plate and  
movable in a horizontal plane;
  - a shaking drive arranged between and connected to the two said plates for the  
horizontal movement of the shaking table plate, said movement essentially and  
exclusively being one of translation, with the means by which to arrest the shaking table  
plate into a precise resting position;
  - a microtiter plate holding fixture provided on the shaking table plate; and
  - a removable microtiter plate inserted in the holding fixture, said plate  
exhibiting a multitude of sample wells, which can be filled with samples or whose  
samples can be emptied out by an automatically activated filling or removing device;  
thus characterized, that over the microtiter plate is a removably arranged evacuating plate  
unit spanning over the latter, which is formed to be hermetically sealed in such a manner  
that a vacuum is permitted to be generated in all of the sample wells of the microtiter  
plate and which is controllably connectable to a vacuum source or to a directed airflow  
source via ports in the device base plate,
  - wherein the evacuating plate unit exhibits lateral walls whose lower edge around the  
lateral edge of the microtiter plate provides a releasably hermetic seal against the shaking  
table plate that is formed to be gas tight for the surroundings and that the inner space in  
the evacuating plate unit is controllably connectable to the vacuum source or to the  
directed airflow source by means of a lead-through channel configuration penetrating the

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shaking table plate and via flexible line segments to the device base plate.

~~The sample processing station in accordance with claim 11,~~ wherein that the microtiter plate, which exhibits indexing means, is provided with an insertable or removable mixing pin plate with vacuum holes and grasping openings, which bears a matrix configuration of downward extending mixing pins or mixing ladles with respectively one assigned to each sample well, said mixing pins or mixing ladles extending with their bottom tips into the corresponding sample wells without touching the bottom thereof, whereby the mixing pin plate together with the indexing means of the microtiter plate exhibits counter indexing means interacting with horizontal clearance of motion and the position of the mixing pins in the matrix configuration and the horizontal clearance of motion are selected in such a manner that during operation and during repose of the shaking drive, the mixing pins do not come in contact with the inside walls of the sample wells, and whereby the inert mass of the mixing pin plate and its frictional relation to the microtiter plate are adjusted in such a manner that during operation of the shaking drive, the mixing pin plate carries out relative movements within the mentioned horizontal clearance of motion opposite the microtiter plate.

16. (Previously Presented) The sample processing station in accordance with claim 15, wherein the mixing pin plate exhibits a matrix configuration comprised of perforations oriented toward the sample container openings of the microtiter plate from whose boundaries the mixing pins or the mixing blades each respectively project downward, and which serve to fill or empty the sample containers without removal of the mixing pin plate from the microtiter plate.



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17. (Currently Amended) A sample processing station, comprising:

a device base plate;

a shaking table plate vertically supported against said device base plate and  
movable in a horizontal plane;

a shaking drive arranged between and connected to the two said plates for the  
horizontal movement of the shaking table plate, said movement essentially and  
exclusively being one of translation, with the means by which to arrest the shaking table  
plate into a precise resting position;

a microtiter plate holding fixture provided on the shaking table plate; and

a removable microtiter plate inserted in the holding fixture, said plate  
exhibiting a multitude of sample wells, which can be filled with samples or whose  
samples can be emptied out by an automatically activated filling or removing device;  
wherein, that over the microtiter plate is a removably arranged evacuating plate unit  
spanning over the latter, which is formed to be hermetically sealed in such a manner that  
a vacuum is permitted to be generated in all of the sample wells of the microtiter plate  
and which is controllably connectable to a vacuum source or to a directed airflow source  
via ports in the device base plate.

~~The sample processing station in accordance with claim 1,~~ wherein the microtiter plate exhibits a sample container connecting plate at the level of the sample container bottom ends and/or at the level of the sample container flow openings, thus characterized in that in the region between each respective group of four sample container bottom ends or of four sample container flow openings, permanent magnet base through-going openings are

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provided and that a permanent magnet base matrix configuration is arranged either under the microtiter plate or over the microtiter plate whose permanent magnet bases are either insertable from below in the upward direction or from above in the downward direction into the permanent magnet through-going openings into the spaces between the sample container groups of four.

18. (Previously Presented) The sample processing station in accordance with claim 17, wherein the permanent magnet bases project outward from a permanent magnet base connecting plate which is arranged beneath or above the microtiter plate to be removable from the latter.

19. (Currently Amended) A sample processing station, comprising:

a device base plate;

a shaking table plate vertically supported against said device base plate and  
movable in a horizontal plane;

a shaking drive arranged between and connected to the two said plates for the  
horizontal movement of the shaking table plate, said movement essentially and  
exclusively being one of translation, with the means by which to arrest the shaking table  
plate into a precise resting position;

a microtiter plate holding fixture provided on the shaking table plate; and  
a removable microtiter plate inserted in the holding fixture, said plate  
exhibiting a multitude of sample wells, which can be filled with samples or whose  
samples can be emptied out by an automatically activated filling or removing device;

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wherein, that over the microtiter plate is a removably arranged evacuating plate unit spanning over the latter, which is formed to be hermetically sealed in such a manner that a vacuum is permitted to be generated in all of the sample wells of the microtiter plate and which is controllably connectable to a vacuum source or to a directed airflow source via ports in the device base plate,

~~The sample processing station in accordance with claim 1,~~ wherein the device base plate and to the shaking table plate supported thereupon, the microtiter plate, a permanent magnet base plate, which is possibly arranged either under or above said microtiter plate, a mixing pin plate, which is possibly arranged over the microtiter plate, the evacuating plate unit spanning over the microtiter plate exhibit robotic manipulator grasping elements for interaction with the manipulator of a single robot and based on the desired selection, are stackable or separable from one another.